FIVE-YEAR REVIEW REPORT

RESIN DISPOSAL

SUPERFUND SITE

ALLEGHENY COUNTY, PENNSYLVANIA

Prepared by:

U.S. Environmental Protection Agency

Region III

Philadelphia, Pennsylvania

U.S. Environmental Protection Agency
Region III
Hazardous Waste Management Division
Five-Year Review (Type I)
Resin Disposal Site (Allegheny County, Pennsylvania)

I. Introduction

A. Authority Statement and Purpose

EPA Region III conducted its review pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended ("CERCLA"), 42 U.S.C. §9621(c); Section 300.430(f)(4)(ii) of the National Oil and Hazardous Substance Pollution Contingency Plan, 40 C.F.R. Part 300 (as amended); and OSWER Directives 9355.7-02 (May 23, 1991), 9355.7-02A (July 26, 1994), and 9355.7-03A (December 21, 1995). This is a statutory review. The purpose of a five-year review is to ensure that a remedial action remains protective of public health and welfare and the environment and is functioning as designed. This document will become a part of the Site File. This is a Type 1 five-year review and is applicable to certain sites, including the Resin Disposal Site, at which the remedial action has been completed.

B. Site Characteristics

The Site is located about one half mile west of the town of West Elizabeth in Jefferson Borough, Allegheny County, Pennsylvania and comprises approximately 26 acres (Figure 1). West Elizabeth is a mixed commercial, industrial and residential area with a stable population. According to U.S. Census Bureau 1990 records, the population within a one-mile radius of the site is 1,819. The Site was operated as a landfill between 1950 and 1964. The landfill is located in the head of a narrow valley on the site of a former coal mine and comprises approximately 2 of the 26 acres.

The Site is surrounded by a suburban residential area to the north and west and by undeveloped property to the south and east. A trailer park and several residential homes are located approximately 1/4 mile southeast and downslope of the Site. The topography of the area is characterized as relatively level highland, with deeply eroded stream valleys. Coal was strip mined from the valley prior to 1950 in the area surrounding the Site.

An unnamed stream originates in the northeastern portion of the Site and runs through the Site downslope to the southeast, ultimately discharging into the Monongahela River approximately one-half mile from the Site boundary.

Major sources of ground water in the area are alluvial valley fill aquifers in the large river valleys, however, ground water within the Site area is limited to storage in fractured bedrock, the voids, left from coal mining and as perched ground water in the unconsolidated soils downslope of the landfill. Ground water quantities are low in the bedrock due to the generally unfractured

condition of the deep bedrock. The coal seam contains ground water, however, it is not considered potable due to its acidic nature and high concentrations of metals. The flow of ground water in the unconsolidated soils downslope generally parallels the surface topography. Although quantities of ground water are available for domestic use, most of the residents in the Site area are connected to the public water supply. However, six residential wells were also identified in the Site area.

C. Site History

Between 1950 and 1964, prior to the Resource Conservation and Recovery Act, as amended (RCRA), 42 U.S.C. 6901 et seq. The Pennsylvania Industrial Chemical Corporation (PICCO) Plant generated and deposited an estimated 85,000 tons of production wastes into the onsite landfill. As a result of these activities, the Site is also known as the PICCO Resin Landfill. The wastes consisted mainly of clay poly cakes and dechlor cakes, which are composed of petroleum and coal derived chemicals mixed with clay. The waste materials were dumped into the landfill as a slurry which collected behind a dike constructed across the upper end of the strip-mined valley. Precipitation runoff from the surrounding hillsides along with any free water from the waste materials collected within the active landfill behind the dike. After the land filling activities ceased, PICCO placed a poorly graded, native clayey soil cover, ranging in thickness from four to ten feet, over the surface of the landfill. As a result, the direct precipitation and run on from the surrounding hills ponded at times on the landfill cover. Some of the water infiltrated the cover, recharging the waste material and adjacent ground water system. The remainder of the water evaporated or ran off to the unnamed stream. The waste was contained within the landfill behind earthen dikes (Figure 2). Over time residual product oils decanted from the waste materials as free product. The free product and infiltrated water migrated southeast through the landfill dike into downslope soils and also southwest into mine voids in the adjacent Pittsburgh Coal Formation.

Prior to 1950, the original coal was strip mined and deep mined throughout the valley. The deep mining was done through a process known as room and pillar mining, which resulted in mine voids throughout the Site. At the location of the landfill, approximately 20 feet of waste was deposited in place of the mined coal. No records exist of the actual wastes deposited in the landfill.

Hercules, Incorporated purchased the business and facilities, which includes the landfill property, from PICCO in 1973. Between 1980 and 1984, a series of field investigations were conducted to provide information on ground water conditions in the coal formation, deep bedrock, and on the extent of contaminated soils downslope of the landfill. These field investigations were conducted for Hercules by Roy F. Weston, Inc. and Murray Associates. The data from these early investigations indicated that contaminants had migrated beyond the buried waste in the landfill and could be found in ground water in the Pittsburgh Coal Formation and in

downslope soils and perched ground water. As a result of these investigations, Weston recommended that Hercules install a leachate collection trench below the lower landfill dike to collect leachate and ground water. This trench was installed in 1983 and is still operating. Liquids collected in the trench are directed to an oil/water separator. The oil is collected and is burned at the Hercules Jefferson Plant boiler. The water is discharged to the Jefferson Borough Sanitary Sewer System and then to the West Elizabeth sewage treatment plant.

A Superfund Site Investigation was completed in April 1982, and the Site received a Hazard Ranking System score of 37.69 in December 1982. The Site was proposed for the National Priorities List (NPL) in December 1982 and was placed on the NPL in September 1983. On November 2, 1987, Hercules entered into a Consent Order and Agreement with the Pennsylvania Department of Environmental Resources (PADER) to conduct a Remedial Investigation/Feasibility Study (RI/FS) at the Site. The Remedial Investigation (RI) work plan was approved by PADER and EPA in February 1988, and work began on March 17, 1988. The purpose of the RI/FS was to characterize the site for potential remediation. This included an extensive study of the extent of contamination of the soils, ground water, and surface water associated with the landfill. A final RI was submitted to PADER and EPA in March 1991, and the final FS was submitted in May 1991.

EPA has chosen to categorize the Site into two operable units. Operable Unit One (OU-1) addresses remediation of the landfill, the adjacent contaminated soils, non-aqueous floating product present in the subsurface mine voids of the Pittsburgh Coal Formation, and monitoring of onsite ground water. Operable Unit Two (OU-2) addresses offsite ground water, seeps and residential wells. A June 28, 1991 Record of Decision (ROD) documented the selected remedial action for OU-1 which included: installation of a multi-layer cap; reinforcement and upgrading of the lower landfill dike to increase its stability; installation of an upgraded oil/water separator downslope of the leachate collection system, with discharge of aqueous phases to a publicly owned treatment works; relocation of a sanitary sewer; institutional controls which include deed restrictions to alert prospective buyers to the presence of hazardous substances onsite and to prohibit future development; construction of a fence around the perimeter of the Site property to prevent unauthorized access; offsite reclamation of non-aqueous phase liquids (NAPLS) through skimmer wells for use as an energy source; and implementation of a Site maintenance and long-term ground water monitoring program. A No Further Action ROD for OU-2, which included long-term monitoring of the ground water, was issued on September 29, 1995.

On October 9, 1991, Hercules submitted a good faith offer to perform the Remedial Design and Remedial Action (RD/RA) for OU-1. After a period of negotiations with EPA, Hercules signed a Consent Decree on February 11, 1992 to perform the RD/RA at the Site. On May 11, 1992, Roy F. Weston, Inc., was approved by EPA as the RD contractor for Hercules. On December 4, 1992, the final RD Work Plan, written by Weston for Hercules, was approved by EPA. A Final Oil/Water Separator Design was submitted prior to the landfill cap design. It

was approved on December 21, 1994. The Final Design for the landfill cap and the fence was approved by EPA on September 29, 1995.

II. Discussion of Remedial Objectives/Evaluation

One of the remedial action objectives at the Site is to prevent Site contaminants from migrating through ground water, and to ensure that Site-related contaminants are not discharging from ground water seeps at levels exceeding maximum contaminant levels (MCLs). A second remedial action objective is to prevent migration of waste material from the landfill and the adjacent contaminated soils and non-aqueous floating product present in the subsurface coal mine voids of the Pittsburgh Coal Formation to avoid any negative effects from dermal contact, ingestion, or inhalation of wind blown soils. A third remedial action objective is to prevent the source material from migrating and adversely impacting the unnamed stream which runs through the Site. The following is a discussion of how these objectives are achieved by the remedy as implemented.

A. Soils

The contract for Remedial Action was awarded 6/10/95. Onsite mobilization for the Remedial Action began 06/12/95. A multi-layer cap equivalent to Resource Conservation and Recovery Act (RCRA) Subtitle C requirements was placed on the landfill, and infiltration controls were installed around the perimeter of the landfill. The cover system includes low permeability clay, synthetic membranes, drainage layers and surface drainage channels. The surface is stabilized by vegetation. This cover system was installed to reduce surface water infiltration to the waste, thereby minimizing discharge of contaminants to the ground water. The landfill closure was completed in the fall of 1996. The lower landfill dike was reinforced with approximately 5,000 tons of clean soil, and then re-graded and hydro seeded. A total of 57,000 tons of clean fill, 3,200 tons of topsoil and 3,800 tons of rip-rap were used at the Site as part of this cleanup. Site inspections are conducted to insure that erosion control measures are effective. A fence was placed around the perimeter of the Site, and also around the two-acre landfill. Hercules also re-paved the access road to the Site. The road allows easier access to the landfill for the necessary operation and maintenance activities.

B. Ground Water

Operable Unit One (OU-1) addressed monitoring of onsite ground water and remediation of free-phase floating product in mine voids in the Pittsburgh Coal Formation. OU-1 also includes a well skimmer system down gradient of the landfill to collect floating product in ground water that may otherwise migrate offsite via the mine voids. Additionally, OU-1 requires quarterly monitoring of ground water for three years, then semiannual monitoring until the five year review. Operable Unit Two (OU-2) addressed dissolved-phase ground water contamination

in the Pittsburgh Coal Formation down gradient from the landfill. The selected alternative for the ground water for OU-2 includes offsite monitoring as well as monitoring the seeps and residential wells near the Site. Under OU-2, the offsite ground water will be monitored quarterly for three years and then semiannually until the five year review. Ground water sampling locations include onsite monitoring wells, offsite monitoring wells, and offsite seeps in the Pittsburgh Coal Formation down gradient of the landfill (see Figure 3). Active residential wells along Lobb's Run were sampled during the Remedial Investigation and/or as part of ground water monitoring in 1999. It was determined during the RI, and re-confirmed by the 1999 ground water monitoring, that residential water users are not affected by Site -related contaminants thus the sampling for residential wells has been discontinued. The majority of the residents in the area, near the Site are connected to a public water supply system.

The decision to include both onsite monitoring wells, which are part of OU-1 and offsite wells and seeps, which were part of OU-2, provides data for a comprehensive, integrated picture of down gradient ground water quality. Results of the multiple samples collected during the RI and analyzed for TCL compounds showed that several, waste-related indicator compounds can be identified. These include benzene, toluene, ethyl benzene, xylene, (BTEX) and naphthalene. Benzene is the most significant contributor to potential human health risks associated with ground water at the Site.

Recovery wells were used to recover free product for OU-1. Weavertown Environmental Group continues the product recovery well monitoring, the latest being May 1999 through October 1999. Following the July 1999 monitoring event, the monthly product recovery activities were modified to a quarterly schedule due to the minimal thicknesses of product in the wells. Product recovery efforts produced no product in May, July or October 1999. Only 0.24 gallons were recovered in June 1999. The amount of recoverable light non-aqueous phase liquids (LNAPL) has significantly declined since the initiation of remedial activities. An overall summary of product recovered to date from the wells is provided in attached Table 1.

Mine Voids

Ground water in the mine voids of the Pittsburgh Coal Formation down gradient from the landfill contains aromatic organic compounds (BTEX, naphthalene, and 2-methyl naphthalene) as contaminants dissolved from the waste materials in the landfill and from free product in the adjacent mine voids. Contaminant concentrations from the most recent sampling are shown in Table 2. The onsite monitoring wells include TW-7, TW-13, TW-14, TW-21, TW-22, and TW-23. The offsite monitoring wells include TW-17, TW-18, TW-19, TW-20, and TW-24. The seeps include Seep 3, Seep 4, and Seep 5 and are analyzed for landfill related compounds. For the ninth consecutive monitoring event of the seeps, no compounds were detected. Well TW-14 was not sampled for dissolved ground water contaminants during the monitoring events because there is not enough aqueous sample to collect and therefore, TW-14 has become part of the

product recovery well network presently. Well TW-18 cannot be sampled due to an obstruction in the well and can not be sampled unless the well is drilled once again. Since, TW-18 is in between TW-17 and TW-19, and both TW-17 and TW-19 do not show any level of BTEX compounds, there is no necessity of TW-18 to be drilled once again to be sampled.

C. Surface Water

The purpose of the stream samples was to determine whether contaminants related to the landfill had migrated into the on-site stream or had been carried offsite by way of sediment transport or surface water flow. The sampling station was established at the downstream weir in the unnamed stream draining the Site approximately 100 feet above the landfill gate. The bi-monthly stream samples were analyzed for benzene, toluene, xylene, ethyl benzene, and naphthalene which have been shown to be indicator parameters for the landfill. Repeated surface water sampling from 1991 to 1998 showed levels of contaminants of concern at or well below Maximum Contaminant Levels for the "Drinking Water Regulations and Health Advisories" in the unnamed stream. The great decrease in levels of contaminants of concern from February of 1991 to 1998 were a result of the following remedial actions: buttressing of the landfill, construction of a multi-layer cover system over the landfill area, upgrading of and oil/water separator and routine product recovery from a network of down gradient product recovery wells. These additional measures prevent contaminated landfill runoff from entering the unnamed stream thus bi-monthly surface water program was ended in 1998.

D. Site Visit

On August 17, 2000, The Environmental Protection Agency's Remedial Project Manager, the PRP's project manager, and the project officer from the Pennsylvania Department of Environmental Protection conducted a Site visit. The participants inspected the fenced landfill, the oil/water separator, the monitoring wells and the unnamed stream at the Site. During the most recent reporting period, the Site drainage controls had sustained damage from an extreme rainstorm that exceeded the design capacity of the drainage controls. During the Site visit, it was observed that the controls had been repaired and had been appropriately improved. Examples of improvements include the installation of rip-rap in previously unlined swales and the replacement of rip-rapped areas with gabion basket blankets. Hercules had installed birdhouses to enhance the natural habitat around the Site in support of indigenous wildlife. All areas of the Site were intact and were functioning as designed. The fence was in good repair and vegetation was fully established on the cap.

III. Conclusions

Contaminant migration is monitored by down gradient ground water wells installed in the mine voids and by seeps along the down gradient outcrop limit. The periodic monitoring events have found no evidence that the contaminant plume is expanding or increasing in concentration. Contaminant levels in all off-site wells and seeps are below MCLs. Regarding the onsite monitoring wells, the only one that has yielded any detectable Site-related compounds is well TW-13. In the latest ground water monitoring report for third quarter in 2000, ethyl benzene was detected at 30 ug/l, xylenes were detected at 42 ug/l and naphthalene was detected at 210 ug/l. These concentrations have been shown to be steadily decreasing, and except for the naphthalene, are below MCLs. This may be evidence that the long term effect of the landfill on down gradient groundwater quality has peaked and the levels of contaminants from the landfill are now diminishing. The regrading of the landfill and installation of the multi-layer cap has eliminated surface water infiltration to the waste, thereby minimizing discharge of contaminants to the ground water.

The recovery wells produced no product in May, July or October 1999 and less than one quart of product was recovered in June 1999. The recovery wells are now sampled on a quarterly basis, not on a monthly basis and therefore, no samples were taken in August and September of 1999. The amount of recoverable light non-aqueous phase liquids (LNAPL) has significantly declined since the initiation of remedial activities. It is expected that the ongoing recovery of free product will further improve ground water quality within the mine voids in the Pittsburgh Coal Formation as well.

Active residential wells along Lobb's Run were sampled during the Remedial Investigation and/or as part of ground water monitoring in 1999. It was determined during the RI, and re-confirmed by the 1999 ground water monitoring, that residential water users are not affected by Site-related contaminants thus the sampling for residential wells has been discontinued. The majority of the residents in the area near the Site are connected to a public water supply system.

Repeated surface water sampling from 1991 to 1998 showed levels of contaminants of concern at or well below Maximum Contaminant Levels for the "Drinking Water Regulations and Health Advisories" in the unnamed stream. The great decrease in levels of contaminants of concern from February of 1991 to 1998 were a result of the following remedial actions: buttressing of the landfill, construction of a multi-layer cover system over the landfill area, upgrading of and oil/water separator and routine product recovery from a network of down gradient product recovery wells. These additional measures prevent contaminated landfill runoff from entering the unnamed stream thus bi-monthly surface water program was ended in 1998.

The institutional controls required by the ROD which includes deed restrictions to alert prospective buyers to the presence of hazardous substances onsite and to prohibit future

development have not been implemented. The responsible parties are working on implementing the institutional controls with their attorney. The EPA will check that the institutional controls are in place before the next five-year review.

No human receptors are currently exposed to Site-related contaminants by way of ground water, surface water or soils. The site contours and vegetation have been restored to the extent practicable. The Site ground water monitoring program and the product recovery system are functioning and adequate. The periodic inspections and maintenance of the landfill cover, the fence, and the oil/water separator are adequate. Environmental conditions at the Site, particularly relating to ground water have improved substantially since the completion of the remedial action construction.

IV. Recommendations

Based upon the above, EPA, Region 3 recommends the following:

- That semi-annual ground water monitoring continue to the next five-year review or until EPA determines that further monitoring efforts are unnecessary in selected monitoring wells. No Site related groundwater contaminants have been observed in the following monitoring wells for two consecutive years: TW-7, TW-17, TW-18, TW-19, TW-20, TW-21, TW-22, TW-23 and TW-24. Therefore, these monitoring wells can be excluded from the ground water monitoring program.

- Quarterly monitoring will continue for TW-13 until the next five-year review or until EPA determines that further monitoring is unnecessary.

- That monitoring wells TW-7, TW-17, TW-18, TW-20, TW-22, and TW-23 be maintained for one more year. Then, in concurrence with a two week prior notification to EPA and Pennsylvania Department of Environmental Protection (PADEP), these wells should be sampled. The results should be reviewed by EPA and PADEP prior to being abandoned according to PADEP regulations. Monitoring wells TW-19, TW-21, and TW-24 should not be abandoned and be periodically sampled before each five-year review.

- That LNAPL recovery continue quarterly until the next five-year review or until EPA determines that further recovery efforts are unnecessary.

- That the periodic monitoring of the various seeps be discontinued.

- That the periodic inspections of the landfill cover system and the fence continue,

and that repairs to the cover and/or fence be implemented as necessary.

- That the operation of the oil/water separator at the landfill be continued until the next five-year review, or until EPA determines that the operation of the separator can be discontinued.

- The institutional controls required by the ROD which includes deed restrictions to alert prospective buyers to the presence of hazardous substances onsite and to prohibit future development have not been implemented for the long term response for the Site. The institutional controls need to be implemented as soon as possible. EPA will check that they have been implemented before the next five-year review.

IV. Statement on Protectiveness

The risk for people living near the Site has been removed by the remedial actions taken. However, because the institutional controls required by the 1991 ROD are not in place, the remedy is not fully protective. EPA will insure that the PRPs put the required institutional controls in place.

V. Next Five Year Review

The next five-year review will be completed no later than June of 2005. The Five-Year Review Report can be found as part of the Administrative Record at the following location:

U.S. EPA Region III (215) 814-3157
6th Floor Docket Room, 1650 Arch Street
Philadelphia, PA 19103-2029

Abraham Ferdas, Director
Hazardous Site Cleanup Division

9/19/00
Date

Figure 1
Site Location Map for Resin Disposal Site
Allegheny County, Pennsylvania

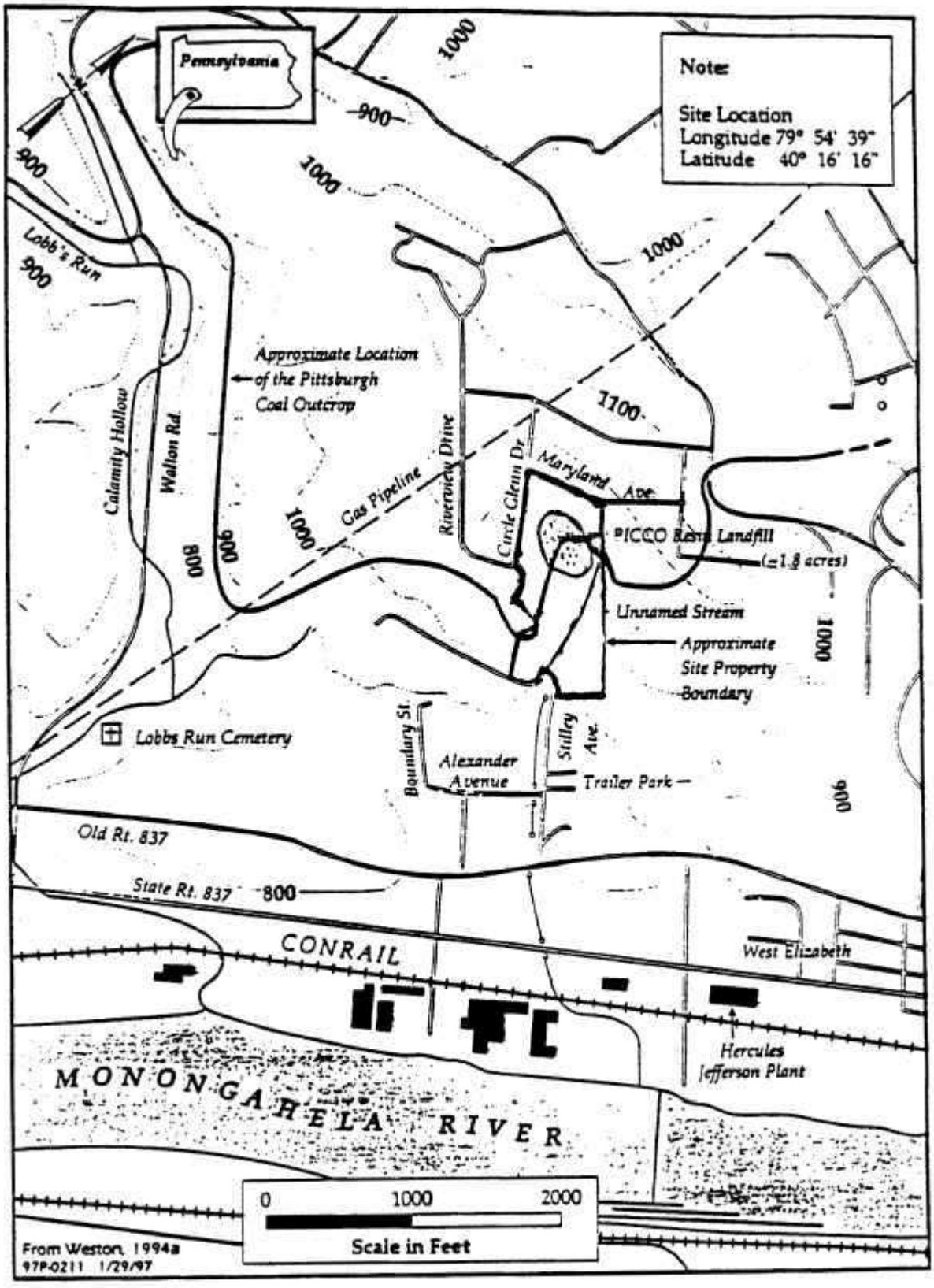

Figure 2
Geologic Map for Resin Disposal Site

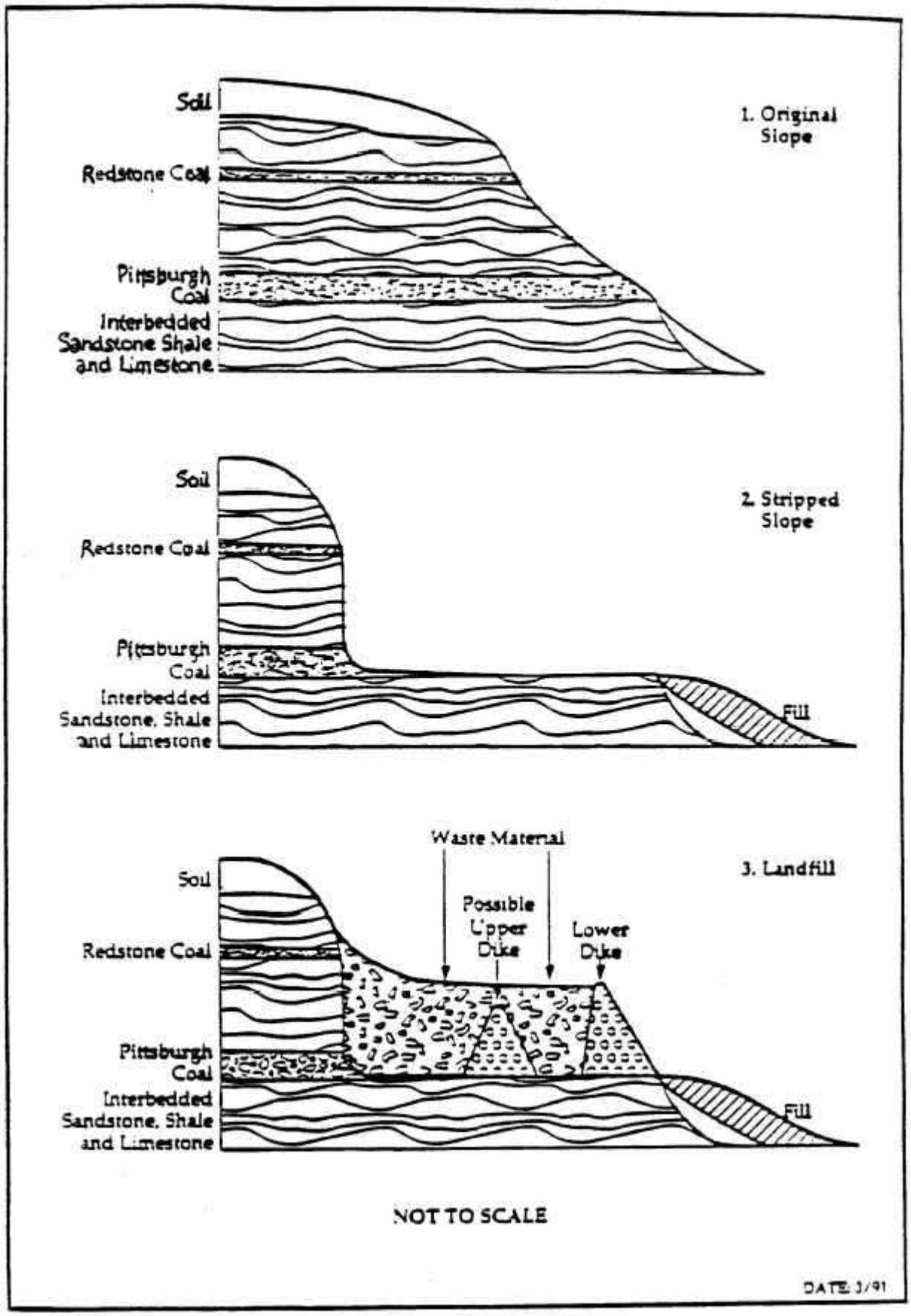

Figure 3
Response Actions Plan Sampling Locations

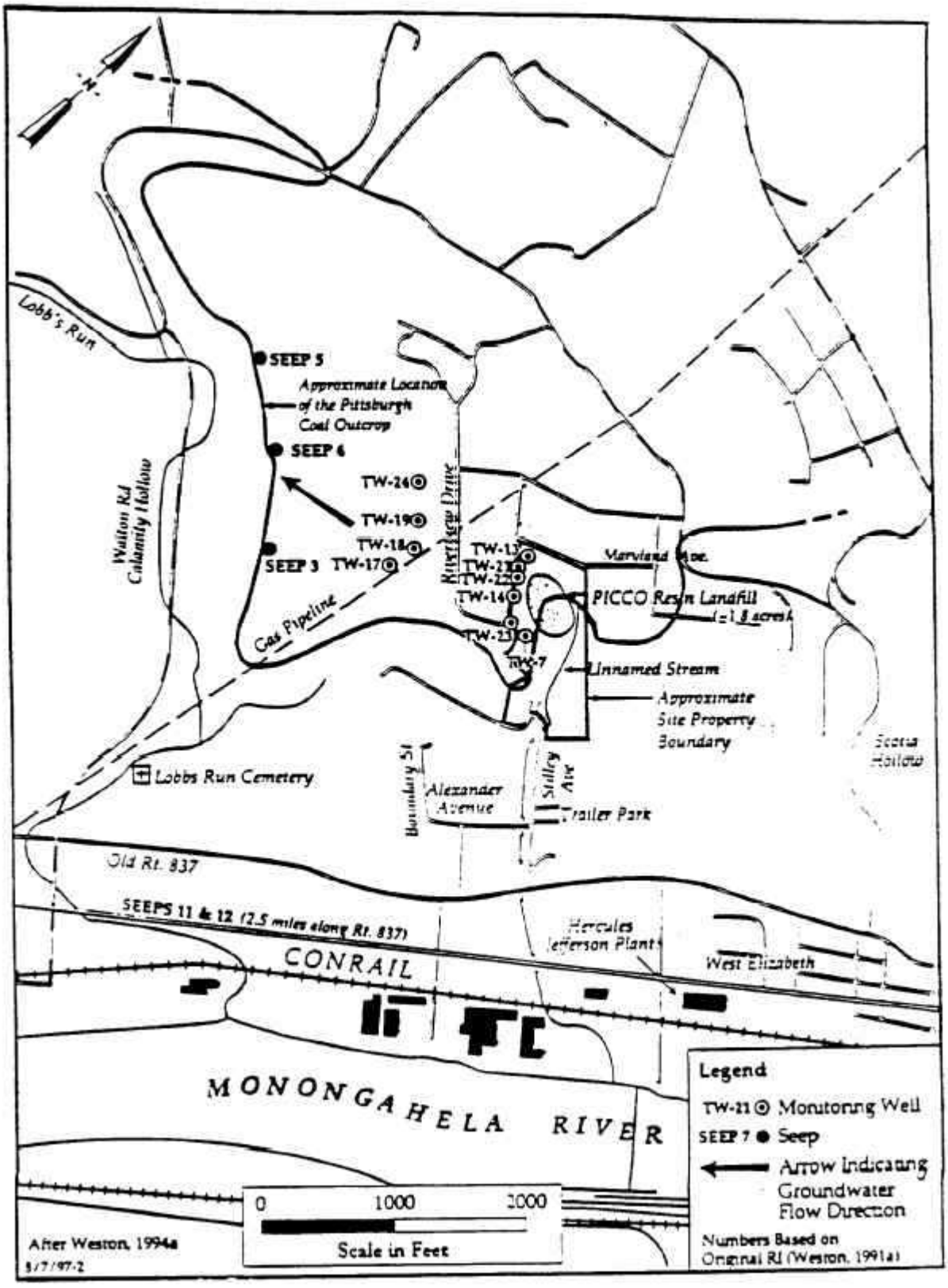

Table 1
Summary of Product Recovery Activities

BI-ANNUAL REPORT NO. 5
PICCO RESIN DISPOSAL SITE
JEFFERSON BOROUGH, PENNSYLVANIA

	RECOVERED PRODUCT - GALLONS						
Month	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**
January				7.00	0.50	0.00	nm
February				6.50	0.05	0.00	nm
March				5.50	0.08	0.00	0.00
April				7.00	0.00	0.00	0.00
May				10.50	0.00	0.00	nm
June				10.00	0.00	0.24	nm
July				11.00	0.00	0.00	0.00
August				9.25	0.00	nm	
September				7.25	0.00	nm	
October				5.75	0.00	0.00	
November				4.25	0.10	nm	
December				2.00	0.00	nm	
Yearly total	1.50	37.40	63.00	86.00	0.73	0.24	0.00
Cum. total	2	39	102	188	189	189	189

nm - not monitored

Table 2

Data Summary Table of Quarterly Groundwater and Seep Monitoring

BI-ANNUAL PROGRESS REPORT NO. 5
PICCO RESIN DISPOSAL SITE
JEFFERSON BOROUGH, PENNSYLVANIA

	Phase I RI Sampling (1990					Focused RI Sampling (1993)					First Quarter 1998						Second Quarter 1998						Third Quarter 1998						Fourth Quarter 1998					
Location	B	T	E	X	N	B	T	E	X	N	B	T	E	mp-X	o-X	N	B	T	E	mp-X	o-X	N	B	T	E	mp-X	o-X	N	B	T	E	mp-X	o-X	N
On-Site MW's																																		
TW-07	nd	2J	nd	nd	99	<10	<10	<10	<10	07J	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	6	<5	<5	<5	<5
TW-13	nd	18J	23J	58	490	7J	10	69	260J	380	23	14	60	96	140	640	16	7	20	33	44	210	8	10	100 J	120	170 J	1,000	<5	<5	41	42	67	400
TW-14	110J	740	4300	3000	110,000	<250	90J	140J	4400	6000	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
TW-21	ns	ns	ns	ns	ns	4J	7J	8J	230J	680	<5	<5	<5	<5	<5	<5	<5 UL	<5 UL	<5 UL	<5 UL	<5 UL	6L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
TW-22	ns	ns	ns	ns	ns	1J	3J	<10	3J	7J	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
TW-23	ns	ns	ns	ns	ns	<10	1J	<10	5J	<11	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Off-Site MW's																																		
TW-17	ns	ns	ns	ns	ns	<10	<10	<10	<10	<11	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
TW-18	ns	ns	ns	ns	ns	<10	<10	<10	<10	6J	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
TW-19	ns	ns	ns	ns	ns	<10	2J	11	12	65	<5	<5	<5	<5	<5	13	<5	<5	12	<5	<5	13	<5	<5	6	<5	<5	8	<5	<5	<5	<5	<5	<5
TW-20	ns	ns	ns	ns	ns	<10	<10	<10	<10	<11	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
TW-24	ns	ns	ns	ns	ns	2J	2J	<10	<10	26J	<5 UL	<5 UL	<5 UL	<5 UL	<5 UL	<5 UL	<5	<5	<5	<5	<5	<5	<5 UL	<5 UL	<5 UL	<5 UL	<5 UL	<5 UL	<5	<5	<5	<5	<5	<5
Seeps																				total X														
Seep 3	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	ns	ns	ns	ns	ns	ns	<5	<5	<5	<5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Seep 4	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	ns	ns	ns	ns	ns	ns	<5	<5	<5	<5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Seep 5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	ns	ns	ns	ns	ns	ns	<5	<5	<5	<5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5

	First Quarter 1999						Second Quarter 1999						Third Quarter 1999						Fourth Quarter 1999					
Location	B	T	E	mp-X	o-X	N	B	T	E	mp-X	o-X	N	B	T	E	mp-X	o-X	N	B	T	E	mp-X	o-X	N
On-Site MW's																								
TW-7	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
TW-13	7	7	64	74	110	740	7	7	64	77	110	800	<5	<5	48	52	84	450	<5	<5	18	12	21	120
TW-14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TW-21	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
TW-22	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
TW-23	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Off-Site MW's																								
TW-17	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
TW-18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TW-19	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
TW-20	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
TW-24	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Seeps																								
Seep 3	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Seep 4	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Seep 5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5

Key:
B - benzene
T - toluene
E - ethlbenzene
mp-X - m and p xyl
o-X - o-xylene
N - naphthalene
nd - not detected
- - not sampled

J - Quantitation is approximate due to limitations identified during the QA review.

L - This compound is present in the sample, but the reported results may be biased low due to an issue identified during the QA review.

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Notes:
1. All analytical results reported in ug/L (ppb).
2. TW-14 was not sampled for groundwater analyses during the quarterly monitoring events due to the presence of product in the well. TW-14 is part of the product recovery well network.
3. TW-18 can not be sampled due to an obstruction in the well.
4. Seep location identification and subsequent sampling did not commence until the second quartely monitoring event of 1998.

Table 2
Data Summary Table of Quarterly Groundwater and Seep Monitoring

BI-ANNUAL PROGRESS REPORT NO.5
PICCO RESIN DISPOSAL SITE
JEFFERSON BOROUGH, PENNSYLVANIA

	First Quarter 1998						Second Quarter 1998						Third Quarter 1998						Fourth Quarter 1998					
Location	**B**	**T**	**E**	**mp-X**	**o-X**	**N**	**B**	**T**	**E**	**mp-X**	**o-X**	**N**	**B**	**T**	**E**	**mp-X**	**o-X**	**N**	**B**	**T**	**E**	**mp-X**	**o-X**	**N**
On-Site MW's																								
TW-7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
TW-13	23	12	47	82	110	380	12	<5	28	42	51	210	<5	<5	**30**	**25**	**42**	**210**						
TW-14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
TW-21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
TW-22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
TW-23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Off-Site MW's																								
TW-17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
TW-18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
TW-19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
TW-20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
TW-24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Seeps																								
Seep 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Seep 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Seep 5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						

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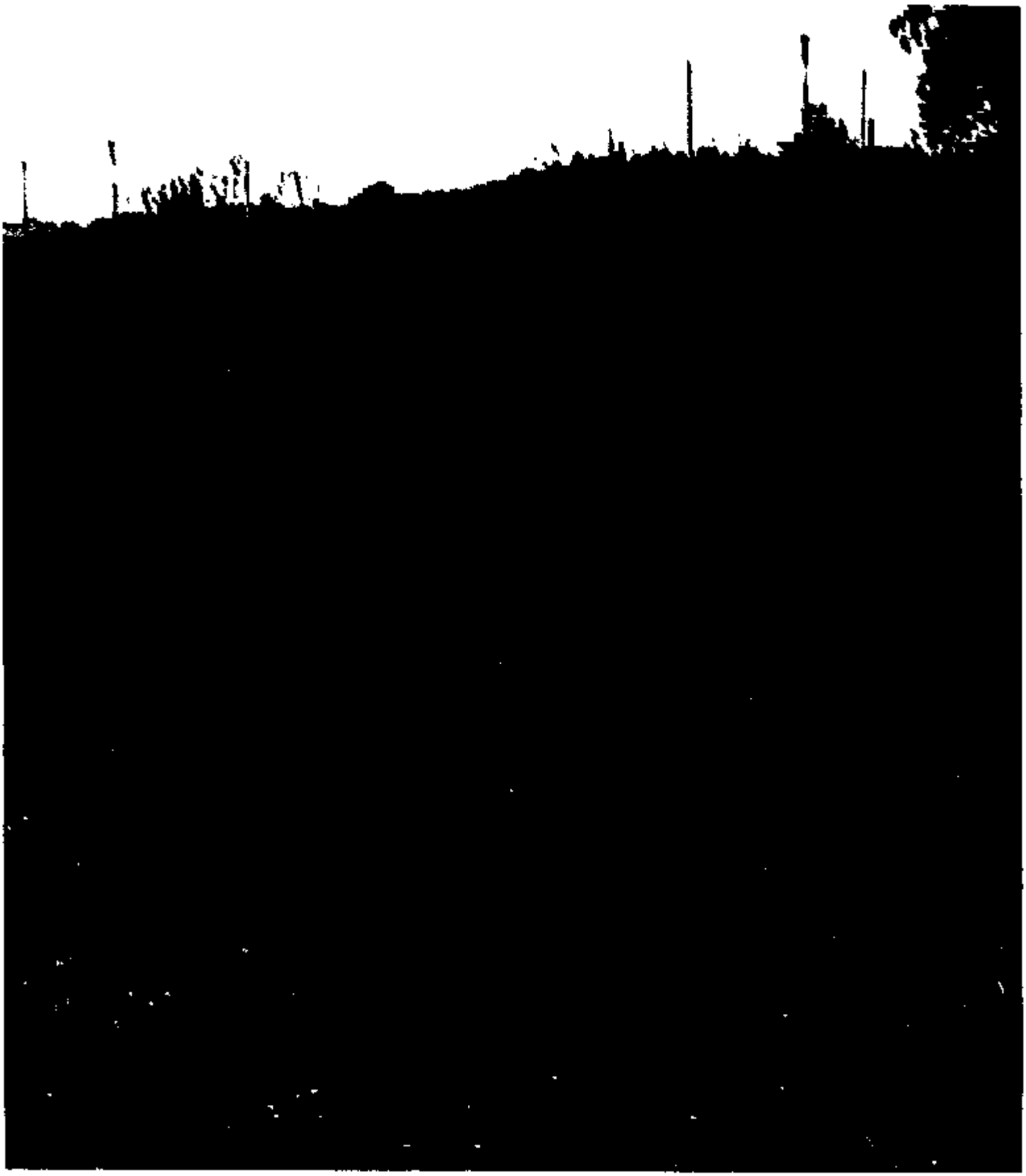
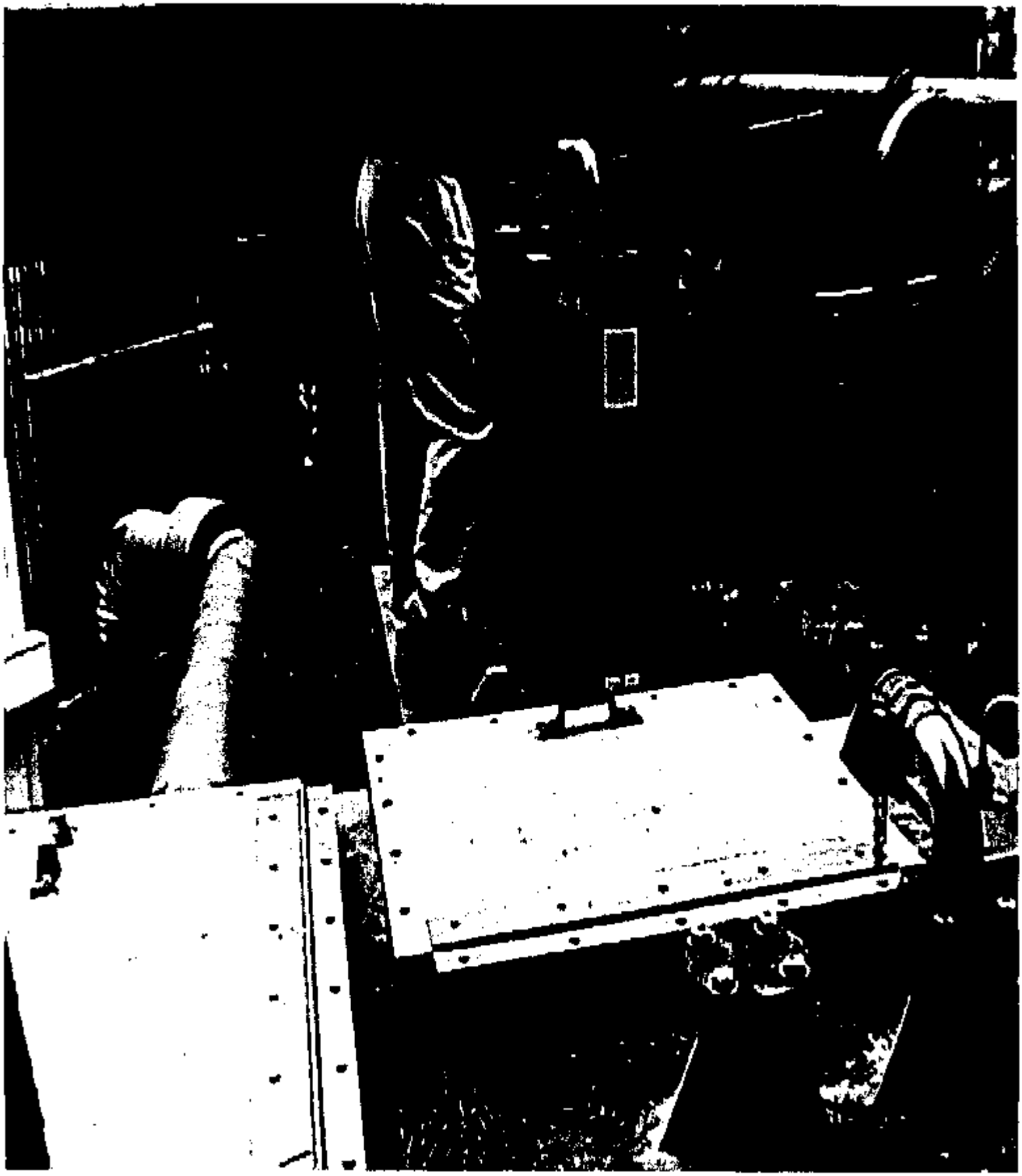
Five-Year Review Pictures for Resin Disposal Site
August 17, 2000

Resin Disposal Vegetated Cap at Landfill with Rip Rap

Resin Disposal Landfill

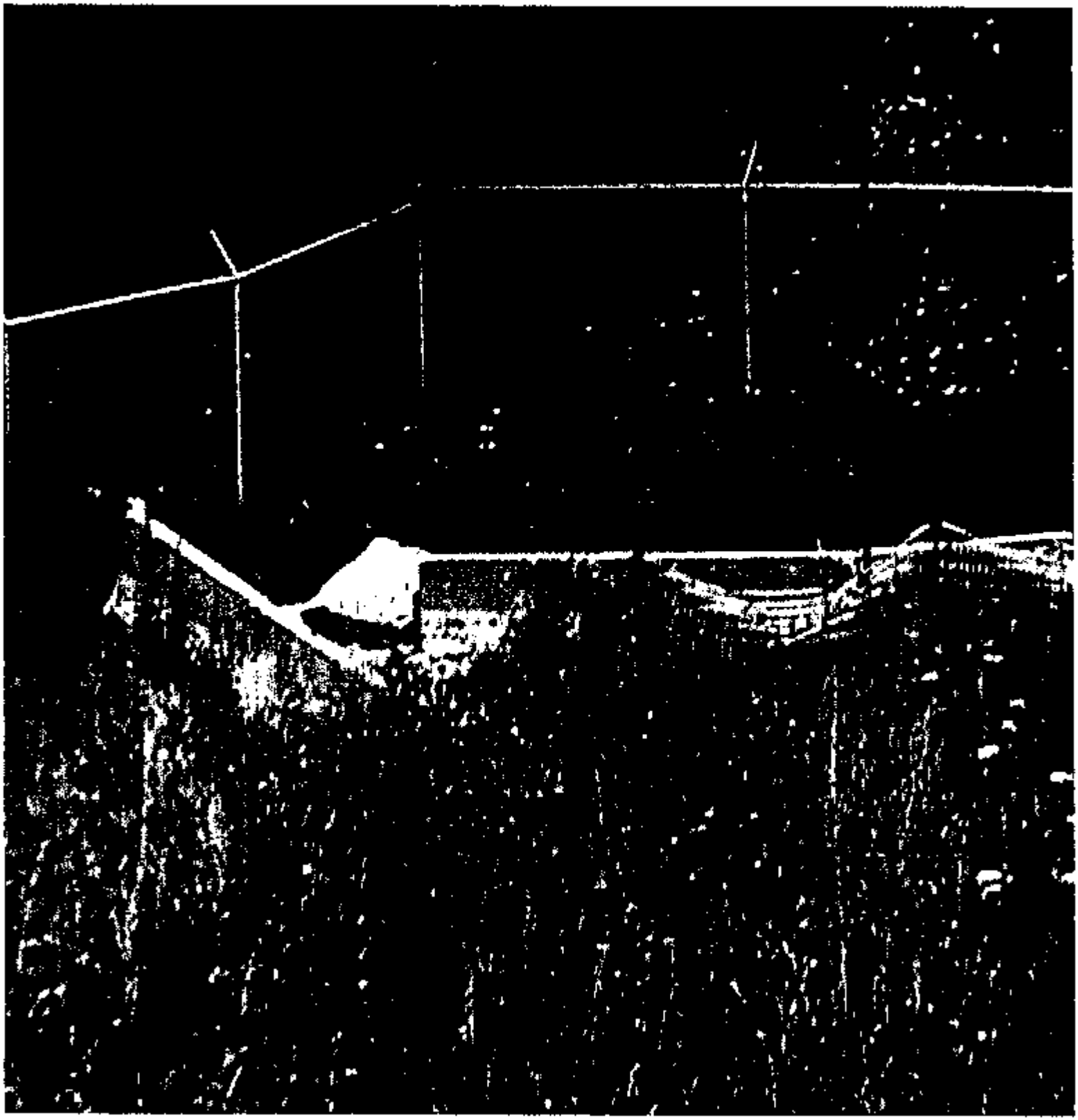


Resin Disposal Site Oil-Water Separator

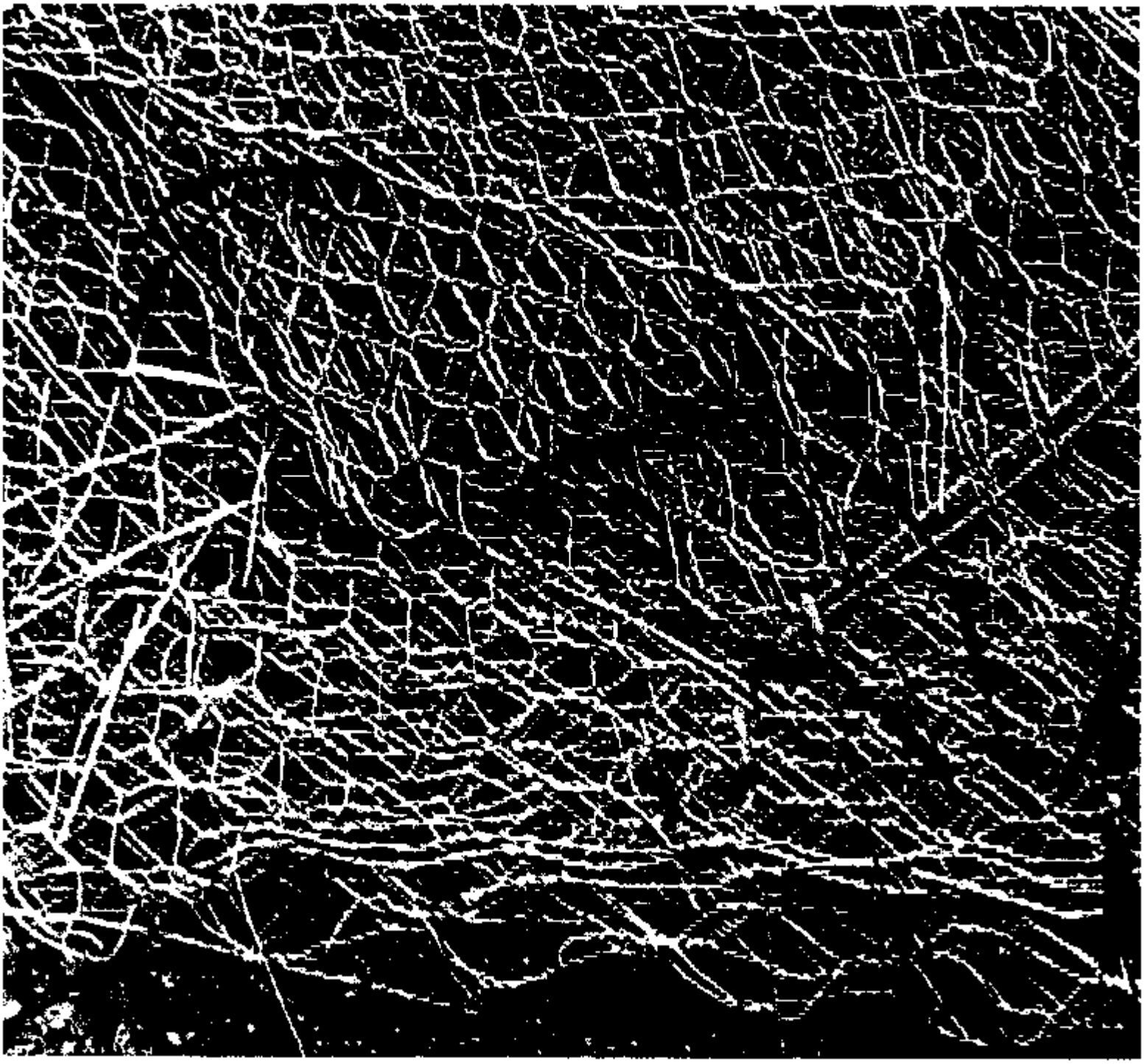


Vegetated Cap at Resin Disposal Landfill

Turkeys at Resin Disposal Site



Gabion Basket Blanket



Close Up of Birdhouse at Resin Site